Industrial

Standardization

and Commercial Standards Monthly

May

New Standard Shows How to Control Quality During Production

(See Article, Page 109)

1942

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RUTH E. MASON, Editor

Our Front Cover: Final inspection of 3-inch shells after the driving bands have been finish-turned. The shells are carried by conveyor to the inspection bench.

Photo Courtesy American Machinist.

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ASA

Reg. in U.S. Pat. Off.

Standardization is dynamic, not static. It means not to stand still, but to move forward together.

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May, 1942 Vol. 13, No. 5

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THE success of our colossal armament program hinges basically on assembly line production on uniform, set standards for materials, tolerances and fits. The system of split bidding and subcontracting of similar products among numerous factories could not succeed without guarantee that deviations from the norm will be minimized. One of the reasons for the collapse of France was the lack of industrial standards.

The War Department's standardization program has been enormously expanded in recent years to achieve greater precision, improved quality and reduced costs. Military standards are of the most severe kind, for an error in the tolerance of a howitzer part of a thousandth of a millimeter may cause the annihilation of an entire brigade. A mechanized army depends on "fits" and "tolerances."

The aim of standardization is not only to improve industrial efficiency and accelerate output, but to conserve materials. Priorities will bring about compulsory standardization. The government will, if necessary, release raw materials only for standard products, as it is doing in defense housing by means of a preference rating system.

—William J. Casey, taken from "The Battle of Raw Materials", *Trusts and Estates,* Jan. 1942.

New Standard Shows How To Control Quality During Production

ASA Publishes Third American Emergency Standard Developed under Project Requested by the War Department

A NEW American Emergency Standard, Control Chart Method of Controlling Quality During Production (Z1.3-1942), has just come from the press. It was developed by the ASA Emergency Technical Committee on Quality Control, which was appointed in 1940 following a request from the War Department that the ASA initiate a project on the application of statistical methods to the quality control of materials and manufactured products.

The new standard describes in detail how a quality control chart[1] may be used for detecting disturbances in the production process at the earliest possible moment—that is, while the product is being made.

When the disturbance has been detected action can be started at once to remove any cause of trouble found to be active in the process—and, hence, likely to impair the quality of the product. In this way, it is often possible to remedy trouble in the process before it has grown to the point where it impairs the product so badly that it is rejected by the inspector. In other words, the control chart will sound the alarm that quality may be nearing the "scrap point," whereas, if no chart were used, the trouble would be found only when the product is rejected.

Need to Reduce "Scrap"

For this reason, the new standard should be of interest to every plant making supplies for war purposes. In many cases the combined requirements of keeping up a high speed of production and at the same time working between rather close manufacturing limits create an urgent need for the application of any measures that will reduce the percentage defective or "scrap." How this can be achieved by the control chart method is described in detail in the new standard. A number of examples are also given, showing how the method is being used in the control of the "blow time" of electrical fuses, the fat content of woolen yarn, and the percentage defective or spoilage of two products, one of which consists of individual units while the other is a bulk product.

The standard calls attention to the fact that the sensitive control obtainable through the use of a control chart may often be secured with little or no additional cost of inspection. In many cases, it points out, the data that are already being collected to serve as a basis for the existing method of inspection may be used with much greater efficiency when the control chart method is applied.

Two previous standards, Guide for Quality Control (Z1.1-1941) and Control Chart Method of Analyzing Data (Z1.2-1941), were published by the ASA last year in a single pamphlet. The former (Z1.1-1941) explains the principle of

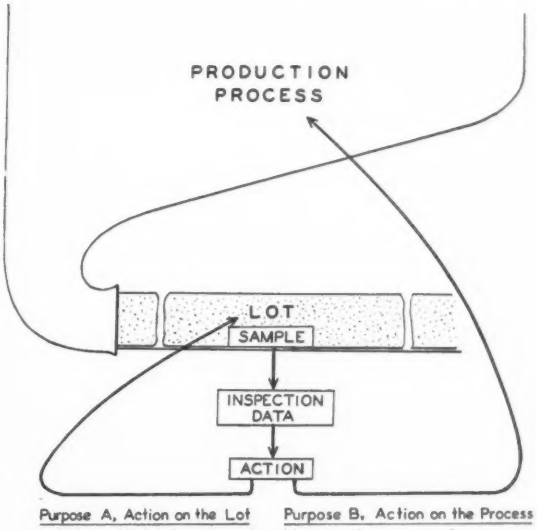


Fig. 1

(From the new standard on Quality Control) Two purposes of inspecting a sample from a current lot of product

[1] Described in detail in the American Emergency Standards Z1.1-1941 and Z1.2-1941.

the quality control chart technique. The second deals with the use of the control chart for judging whether there is an indication of lack of control (as in inspecting a lot of product furnished by a supplier). The new standard on the other hand makes recommendations on how to use the chart for taking action to remedy trouble in the *process*, if necessary.

The introduction to the new standard explains the two purposes of inspecting a sample from a current lot of product, visualizing these purposes by means of the diagram, Figure 1. The production process is represented as resulting in a continuous flow of product. From a portion of this flow a sample is taken. This sample may serve either of two purposes. Purpose A is to enable us to decide what to do with the *lot* of product (accept it or reject it). Purpose B is to enable us to take a decision in regard to the *process* (leave it alone or adjust it).

The Introduction is the first of five chapters, the other four being entitled: II. Preliminary Steps in Setting Up a Control Procedure; III. Starting the Control Chart; IV. Using the Control Chart; and V. Illustrative Examples. The chapters are followed by a Glossary of Symbols and Terms, and three Appendices.

Three American Emergency Standards for statistical control of quality have been prepared by an ASA Emergency Committee. This committee was organized following a request from the War Department, which was based on the value of such standards to the production of supplies for the fighting forces.

Members of this ASA Emergency Technical Committee are:

H. F. Dodge, Bell Telephone Laboratories, *Chairman*

A. G. Ashcroft, Alexander Smith and Sons Carpet Company.

W. Edwards Deming, U. S. Bureau of the Census

Leslie E. Simon, Ordnance Department, U. S. Army

R. E. Wareham, General Electric Company

John Gaillard, American Standards Association, *Secretary*

The first two standards, published last year by the American Standards Association in one pamphlet, are available from the ASA at 75 cents. They are the American Emergency Standards, Guide for Quality Control (Z1.1-1941) and Control Chart Method of Analyzing Data (Z1.2-1941). The new American Emergency Standard, Control Chart Method of Controlling Quality During Production (Z1.3-1942), is available from the American Standards Association at 75 cents.

Sessions Is New Chief Of OPA Consumers Division

New changes in the Consumer Division of the Office of Price Administration have just been announced. Dan A. West, who has been Director of the Division, is now to serve as Special Assistant to the Industry Council, and Robert E. Sessions takes over his duties as Director of the Consumer Division. Mr. Sessions has been serving as Assistant to Acting Deputy Administrator Keir. In addition to his new duties he will continue to serve as Special Assistant to Leon Henderson in connection with the War Production Board. Before his connection with the OPA, Mr. Sessions was assistant to the general manager of the Tennessee Valley Authority.

In his new position, Mr. West will report to the Industry Council and will be responsible for advising on major problems of retail relationships in connection with the work of the Council, particularly with relation to the problems of small retailers.

In addition to these changes, it has been announced that Dexter Keezer, Assistant Administrator of OPA, in direct charge of the Consumer Division, has been given enlarged authority, his duties now including other fields in addition to the work of the Consumer Division.

Specific Weight Is γ In Hydraulic Symbols

INDUSTRIAL STANDARDIZATION apologizes to those concerned with the standard Letter Symbols for Hydraulics for permitting a typographical error to appear in the article by J. C. Stevens, pages 87 through 89, of our April issue. Through some error which we did not catch at the time, we used the symbol δ instead of the symbol γ in referring to specific weight. The second paragraph on page 88, therefore, should read:

"A rather sharp distinction has been drawn between density and specific weight. Our thinking in this regard needs to be corrected. Density, ρ, represents mass per unit volume and specific weight, γ, must be thought of as force per unit volume. The relation $\rho = \gamma/\delta$ thus obtains. Incidentally we found the profession about equally divided between γ and w for specific weight but the Greeks finally won."

British Adopt American Quality Control Standards

American Emergency Standards are published by British Standards Institution

THE British Standards Institution, with the permission of the American Standards Association, has reprinted the two first American Emergency Standards on quality control as British War Emergency Publication B.S. 1008:1942. These standards are: Guide for Quality Control (Z1.1-1941) and Control Chart Method of Analyzing Data (Z1.2-1941).

To introduce these statistical methods to those who may be interested in using them, a joint meeting of the Institutions of Civil, Mechanical, and Electrical Engineers was held in London on April 15, the British Standards Institution reports.

The recognition given by the British Standards Institution to the work of the American Emergency Committee on Quality Control, under the chairmanship of H. F. Dodge of the Bell Telephone Laboratories, is particularly interesting when considered against the earlier developments in this field in Great Britain. In 1935 the British Standards Institution issued a publication entitled "The Application of Statistical Methods to Industrial Standardization and Quality Control" by Dr. E. S. Pearson. This publication was the result of the interest awakened at a conference held in London in May, 1932, between British representatives of manufacturing industries and Dr. Walter A. Shewhart of the Bell Telephone Laboratories. The purpose of the conference was to discuss means whereby closer cooperation might be secured between workers engaged on the one hand in the theoretical development of statistical methods and on the other in their practical application to problems of standardization, and particularly in specification of quality. On this occasion Dr. Shewhart presented several papers on the subject. As a result of this conference, the BSI organized a committee on the subject of which Dr. Pearson was a member. Part of the scope of work of the British Committee was to draw up a review of statistical methods applicable to the problems being considered. This review, given in the British publication mentioned above, was primarily the work of Dr. Pearson and upon the recommendation of the committee it was published under his name.

It is gratifying for the ASA to note the unification of national practices in the U. S. and Great Britain in the field of statistical control of quality that has grown from the cooperation between American and British groups of experts.

Public Health Association Will Co-Sponsor ASA Plumbing Project

The American Public Health Association, on invitation of the American Standards Association, has accepted joint sponsorship with the American Society of Mechanical Engineers for the work of Project A40 on Minimum Requirements for Plumbing and Standardization of Plumbing Equipment. The action of the ASA Standards Council, which voted to invite the APHA, was based on recommendations transmitted by the American Society of Mechanical Engineers some months ago.

The American Public Health Association will be represented on Committee A40 by M. W. Cowles, Health Officer, Hackensack Water Company, and Sol Pincus, Deputy Commissioner of Health, New York City. Mr. Cowles has for some time been a member of the sectional committee as a representative of the American Water Works Association, but will in the future represent the APHA.

Other recent changes in personnel of this committee include: Dean F. M. Dawson, University of Iowa, succeeding Mr. Cowles as representative of the American Water Works Association, with Richard Hazen, Consulting Engineer, as alternate; Dean Thorndike Saville, College of Engineering, New York University, as a representative of the ASME; G. C. St. Laurent, Consulting Engineer, as representative of the American Hotel Association; A. I. Heim as representative of the Copper and Brass Research Association; R. H. Zinkil, Crane Company, as a representative of Sanitary Cast Iron Enameled Ware Association.

Standard Code Speeds Letting of Subcontracts

Stanley Plan is success in trial by War Production Board

THE Stanley Plan, which aims to apply to the process whereby a prime contractor locates a suitable subcontractor the same classification principle which enables a reader to locate the book he wants in a library, has just completed its first month's tryout by the Contract Distributing Service of the War Production Board in Chicago. Enthusiastic reports of the results have already been received from prime contractors who have tried the plan, it is reported, subcontractors having been found without trouble for many difficult little jobs for which no production facilities had seemed available.

Use Standard Classification System

The Plan is essentially a scheme of standard catalog designations, similar to a library classification system, applied to metal-cutting tools. Each machine is assigned a symbol. A boring machine, for example, will always bear the letter A; drilling machines B; lathes C. Boring machine ABA, according to the Code, will always be a 42 in. vertical boring and turning mill with one turret and one plain swivel head. Drilling machine BCA will always be a three-spindle sensitive bench type machine. In addition to the machine code the Plan also includes a standard notation system to describe the details of the job.

Code Describes Jobs

By means of this system the prime contractor describes in detail but in code the jobs for which he needs a subcontractor, the type of machines needed, the tolerance, the machine hours, and the material required. This information is sent to Washington, where it is punched on a Holworth card, and run through a sorting machine to be classified. This code information is then compiled into a "directory" which lists the machines alphabetically by code together with the code notation indicating the job on which the machine is needed. In another section, the "breakdown of jobs section" of the Directory, the jobs are listed alphabetically by code number, and all details of the job are given. These include the name of the prime contractor and his address, delivery date, machine hours per week needed to meet the schedule, how many weeks the job is expected to take, who supplies jigs and fixtures, patterns and dies and material, kind of material, and weight of finished part.

The Directory is mailed each week to potential subcontractors. The subcontractor who receives the Directory in turn prepares a list in code of the machines and equipment which he has available. Then he compares his list of machines and equipment with the code list of the machines needed as given in the Index of Jobs section in the Directory. When he finds a code symbol indicating that his type of machine is needed for a subcontracting job, he looks for the job symbol in the "Breakdown of Jobs" section to find the complete details of the job and the name of the prime contractor.

Having decided that he is qualified to do a certain subcontracting job, the subcontractor then contacts the prime contractor and asks for drawings. With the drawings he can estimate the job, and from this point on the procedure is identical with current contractual practices between prime contractors and subcontractors.

Although the system may look complicated at first glance, it is actually simple enough so that a clerk or stenographer properly instructed in the use of the codes can do the work of listing a company's machines and jobs in the standard code with little trouble, the National Association of Manufacturers, which is cooperating with the WPB in initiating the use of the plan, declares.

Tests Show Good Results

Already tangible results have been obtained from a trial of this plan, the War Production Board announces. In one case, for example, a large prime contractor entered an item in the directory because the particular wood-turning job to be done presented difficulty in finding a suitable source to sublet the work. Exact tolerances were needed. The day following that on which the directory was issued, a specialty manufacturer unknown to the prime contractor presented three sample pieces of the exact size and tolerances indicated in the listing. The same afternoon, a subcontract arrangement was made by the prime contractor with the specialty manufacturer.

In fact, according to *Business Week*, May 9, some large companies are so pleased with the success of the Plan that they "are already plugging to have the plan continued after the war, as a much-needed national service to production."

Additional information about the Stanley Plan can be obtained from the WPB Contract Distribution Service, Civic Opera Building, Chicago, or from the National Association of Manufacturers, Investment Building, Washington, D. C.

ISA Tolerance System Is Issued In Inch Dimensions by ASME

AMERICAN manufacturers who in the last few years have had to work with the international system of fits (the ISA System) based on the ISA System of Tolerances can now become familiar with the details of the system in an English edition just published by the American Society of Mechanical Engineers. This edition, prepared and published by the ASME at the request of the ASA Committee on Allowances and Tolerances for Cylindrical Parts and Limit Gages (B4), contains detailed tables of limits and fits converted from the metric system into inches. The ASA committee requested the English edition in order that it may study the ISA proposal to determine whether this system of fits can be of help in revising the American Tentative Standard, Tolerances, Allowances, and Gages for Metal Fits (B4a-1925).

In the ten years during which the International Standards Association worked on the ISA System, every effort was made to make the fits interchangeable with those in existing national standards. Formulas for tolerances and allowances used as a framework represent the experience gathered in workshop practice. A special study was made of the wide clearance fits and the very tight press fits before they were finally adopted. Before the outbreak of the present World War, 16 countries had already adopted the ISA System.

Main Features of ISA System

The main features of the ISA System are:

The reference temperature for limit gages is 20 C. This means that a gage must have its nominal size when the gage is at the temperature of 68 F.

The nominal size range of holes and shafts extends from 0.04 to 19.69 in. and is subdivided into a number of subranges for each of which the tolerance on a part and the allowance of a fit is constant. The nominal size of the mating parts serves as the reference line from which the limits of workpieces and gages are located.

Fits are given in the Basic Hole system, as well as the Basic Shaft system.

Tolerances are unilateral: the tolerance on a part is measured in one direction from its basic size and not as "plus and minus" variation, or bilateral tolerance.

The shafts and holes may be combined at will. However, for the guidance of designers in the selection of suitable fits there is included a series of recommended fits (hole-shaft combinations) covering the most common requirements of industry.

The manufacturing tolerance on a "Go" gage must lie within the limits of the workpiece but the gage may be used until it has worn a specified small amount past the "Go" limit of the workpiece. A "Not Go" gage is permitted to vary a specified amount in either direction from its nominal size, that is, from the "Not Go" limit of the workpiece.

The International Standards Association, a federation of national standardizing bodies of more than 20 countries with headquarters in Basle, Switzerland, is now functioning only as an interim organization, maintaining files and records in readiness to continue its work when conditions again permit.

Copies of the ISA Tolerance System are available from the American Society of Mechanical Engineers, 29 West 39th Street, New York, at $2.50.

ASA Adds Three Standards On Concrete Reinforcing Materials

Three standards giving specifications for concrete reinforcing materials were approved last month by the American Standards Association, on recommendation of the American Society for Testing Materials' Committee A-1 on Steel:

Axle-Steel Bars for Concrete Reinforcement (ASA G43.1-1942; ASTM A160-39)

Fabricated Steel Bar or Rod Mats for Concrete Reinforcement (ASA G44.1-1942; ASTM A184-37)

Welded Steel Wire Fabric for Concrete Reinforcement (ASA G45.1-1942; ASTM A185-37)

These three standards supplement three other American Standards for concrete reinforcing materials, which were submitted to the American Standards Association by the American Society for Testing Materials and approved some years ago. These three standards are: Specifications for Billet Steel Concrete Reinforcement Bars (ASA A50.1-1939; ASTM A15-1939); Rail Steel Concrete Reinforcement Bars (ASA A50.2-1936; ASTM A16-35); and Cold Drawn Steel Wire for Concrete Reinforcement (ASA A50.3-1936; ASTM A82.34).

Definitions for Electrical Terms Are Issued as American Standard

New dictionary is first comprehensive collection of definitions for terms used in all branches of electrical engineering, completed by widely representative committee of experts in every electrical field after twelve years' work

by C. H. Sanderson[1]

Chairman, ASA Sectional Committee on Definitions of Electrical Terms

QUESTIONS as to the meaning of many words or terms used in connection with electrical engineering or the electrical industry should now be answered with little difficulty. For the first time, important terms in all branches of electricity have been formulated and defined by a widely representative committee of experts in every field of electricity and have been published in one volume, the new American Standard Definitions of Electrical Terms (C42-1942).

Heretofore, the definitions in electrical literature have varied widely, have been scattered, and have generally been formulated by individuals or by small groups. Many had gained some acceptance and approval in their specific fields but were practically unknown elsewhere, and some groups of general terms had long been the subject of controversy. The engineer or scientist or student who wished to have ready access to electrical definitions found it necessary to assemble a sizable library and often had to choose between two or more definitions of the same term.

Work under Leadership of AIEE

More than 12 years' work by an ASA sectional committee of 46 members, working under the leadership of the American Institute of Electrical Engineers, went into the preparation of this new reference book of electrical definitions. Eighteen subcommittees of specialists in the specific electrical fields covered by the definitions prepared the standard. More than 300 individuals have given material assistance and many others have helped in specific instances. The 34 organizations represented on the sectional committee include the national engineering, scientific, and professional societies, as well as national trade associations and government departments, and miscellaneous groups.

In addition, the work of the subcommittees was checked carefully by widely circulating the reports of each subcommittee, first in draft form, and then after revision in printed form. As a result, a great deal of constructive criticism was received both from other members of the committee and from experts outside the committee and subcommittee personnel.

Use Recognized Meanings

In formulating the definitions the committee tried to express the meaning which is generally associated with each term in electrical engineering in America. Wherever practicable the definitions were generalized in order to be sure not to preclude any of the specific interpretations for that term as used in particular applications. The committee recognized that brief, simplified phrasing usually presents the clearer word picture. The words used by the committee in expressing the definitions have the accepted meanings as given in recognized dictionaries, unless they are defined specifically in the glossary. Specialized definitions for common words have been discouraged.

The wide field covered by the standard is

[1] System Planning Engineer, Consolidated Edison Company of New York.

shown in the Groups of definitions into which the standard is divided. Seventeen of these Groups are included:

General (Fundamental and Derived) Terms (Group 05)
Control Equipment (Group 25)
Electric Welding and Cutting (Group 50)
Electrobiology, including Electrotherapeutics (Group 80)
Electrochemistry and Electrometallurgy (Group 60)
Electrocommunication (Group 65)
Electromechanical Applications (Group 45)
Electronics (Group 70)
Generation, Transmission and Distribution (Group 35)
Illuminating Engineering (Group 55)
Instruments, Meters and Meter Testing (Group 30)
Radiology (Group 75)
Rotating Machinery (Group 10)
Switching Equipment (Group 20)
Transformers, Regulators, Reactors, and Rectifiers (Group 15)
Transportation (Groups 40, 41, 42)
Miscellaneous (Group 95)

Where a term occurs in more than one group or section, the corresponding definition, if identical, is usually given but once and elsewhere the term is listed by title and cross-referenced. Where more than one term is in use for the same concept, one term is given first in bold-face type and the synonyms follow in light-faced type. This system is not intended to indicate preference.

Started as International Project

The work to coordinate electrical definitions started as an international project in 1910 when the International Electrotechnical Commission appointed a committee on Nomenclature for the purpose of drafting an international list of terms and definitions. As standardization, both national and international, was then in its infancy, the work progressed slowly for some years. The first work of the IEC Advisory Committee on Nomenclature, under the chairmanship of the late Dr. C. O. Mailloux, consisted of an exhaustive study of all the recognized systems for classification and numbering of terms in a technical glossary. The system decided upon, and now used in this American Standard, was adopted at the IEC meeting at Bellagio in 1927 and used in the international vocabulary of some 1860 terms issued in 1938. It was adopted both abroad and by the definitions committee here only after a most careful study and in the belief that it permits the greatest possible latitude for interpolation of terms which may be needed to take care of future developments without changing group and term arrangements and numbering.

For some time before this 1927 meeting of the IEC, the United States National Committee of the IEC had been working toward the organization of a committee to prepare an American vocabulary, recognizing that only a fraction of the terms required for a serviceable American vocabulary would be covered in the international vocabulary.

The American Standards Association approved the initiation of the work in 1928 on recommendation of the Standards Committee of the American Institute of Electrical Engineers. The scope was outlined as:

"Definitions of technical terms used in electrical engineering, including correlation of definitions and terms in existing standards."

Under this authorization, the ASA sectional committee on Definitions of Electrical Terms (C42) was organized durnig the same year, under the sponsorship of the American Institute of Electrical Engineers, and with Dr. A. E. Kennelly as chairman. In 1932 the first report was printed, and 3,000 copies were distributed for comment and criticism. In 1937 the second general revision was compiled and distributed. Early in 1940, C. H. Sanderson was appointed chairman (that office having been vacated in 1939 by the death of Dr. A. E. Kennelly). The final preparation of the work for approval as an American Standard was brought to a close in the spring of 1941.

Also Adopted by Canadian Standard Body

The new American Standard, which was approved by the American Standards Association August 12, 1941, and by the Canadian Engineering Standards Association on March 2, 1942, has unified the existing groups of definitions and has rounded out these groups and added many others. It covers more than three times the number of

In the firm belief that it is only through the widest possible distribution of the American Standard Definitions of Electrical Terms (C42-1941) and by placing it in the hands of every interested individual that the great inherent value of the standard can be realized, the American Institute of Electrical Engineers, sponsor and publisher of the standard, decided to make it available at a price only sufficient to cover the cost in quantity production lots.

Copies of Definitions of Electrical Terms, 300 pages, 8 by 11 inches, fabrikoid binding, may be obtained at $1 per copy net in the United States, $1.25 (in U.S.A. currency) elsewhere, from the American Standards Association.

definitions in electrical engineering than does any other publication on the subject in any other language.

It is an extension of the function of the recognized dictionaries into a specialized field which has not hitherto been covered, and should, therefore, prove of great value to the general public as well as to scientists and engineers.

Both the American Standards Association and the American Institute of Electrical Engineers acknowledge their indebtedness and appreciation of the time and experience so freely given toward the successful conclusion of this work by many organizations and individuals. The assistance obtained from the definitions and glossaries issued by various technical organizations and national standards associations, particularly the British, and the experience of the Secretariat on Nomenclature of the International Electrotechnical Commission, has been very valuable.

New Directory Gives Data On Testing Laboratories

IN recognition of the desirability under present conditions of independent commercial testing service and in anticipation of a marked demand for such service, the National Bureau of Standards has just released a Directory of Commercial Testing and College Research Laboratories, the U. S. Department of Commerce announces.

The directory contains the names of 244 commercial laboratories, with 71 branch laboratories or offices, together with the addresses and a brief outline of the type of commodities or products tested. It also lists the laboratories of 199 colleges which are used not only for purposes of instruction but also to a considerable extent for research.

In accordance with the law the National Bureau of Standards makes tests and carries out investigations for other Government agencies. It does not make tests for private individuals if other laboratories can do the work with sufficient accuracy. The Bureau's facilities now are almost wholly given over to projects directly related to the war effort.

It is believed that the existence of a thoroughly classified list of commercial testing laboratories will have a number of beneficial effects in promoting the use of specifications, not the least important of which will be the inducement offered to the large number of purchasers who have hitherto hesitated to buy on specifications. Many such purchasers are not individually equipped to make their own acceptance tests. The knowledge that they can at any time call upon testing laboratories to check deliveries is expected to encourage many such purchasers to take full advantage of the specification method of purchasing.

Large numbers of manufacturers, in order to overcome the disadvantage which most purchasers have in comparing commodities purchased with specification requirements have indicated their willingness to give written certification that their products meet specification requirements. In fact, the Bureau of Standards has compiled more than 860 different lists of manufacturers who are prepared to stand behind their products in this manner. These lists now contain more than 23,000 names.

The new directory is known as Miscellaneous Publication M171, copies of which may be obtained from the Superintendent of Documents, Washington, D. C., at 15 cents per copy.

Shepard Is Deputy Chief Of Simplification Branch

R. B. Shepard, chief electrical engineer of the New York office of Underwriters' Laboratories, has been called to Washington by Howard Coonley, chief of the Simplification Branch of the WPB Bureau of Industrial Conservation. Mr. Shepard will serve as head of the project workers and as Deputy Chief of the Simplification Branch.

Mr. Coonley plans to have eight project sections, each section to work under an Industrial Specialist who will report directly to Mr. Shepard. The sections are being set up as nearly as possible in line with the organization of the WPB industry and commodity branches.

Mr. Shepard is an alternate member of the ASA Standards Council, of the Electrical Standards Committee, and of the United States National Committee of the International Electrotechnical Commission.

Association Offers Service to Builders On Coordination of Building Sizes

Modular Service Association Will Also Continue Work for ASA Committee A62

THE war program has resulted in slowing down the work of ASA Committee A62 which is developing coordinated sizes of building materials, M. W. Adams, secretary of the committee announces. Many of the producing industries which have been cooperating in the work of the committee, he reports, are now fully occupied with the war effort.

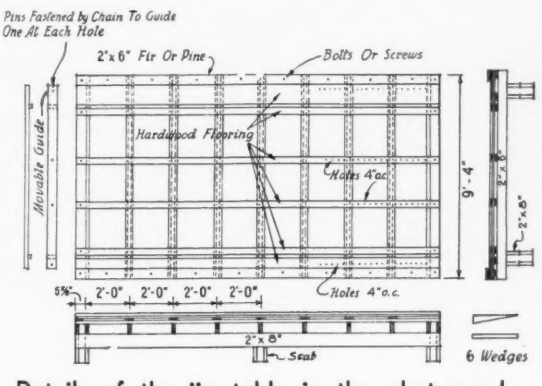
In view of this fact, the Modular Service Association, the non-profit organization which was organized to serve the building industry and also to provide a permanent staff for ASA Project A62, is offering an engineering service to architects and builders to make available to them the work that has already been developed in Project A62. For this purpose the Modular Service Association has increased its staff by the addition of several top-flight architectural designers and engineers, many of whom have been connected with large housing and building projects in positions of responsibility.

Used for Emergency Constructions

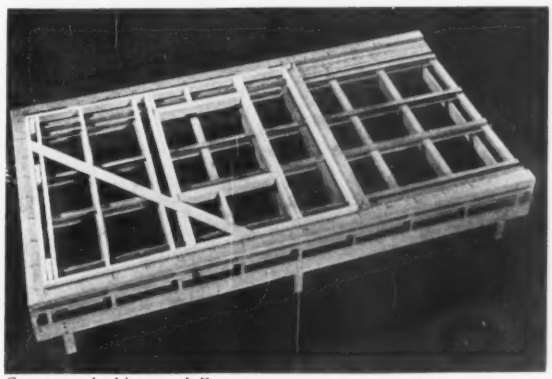
It is expected that this service will be made available for two different types of emergency constructions. First, for load-bearing masonry constructions the studies of the A62 committee have developed details that are sufficiently complete to offer real advantage and economy. For the war emergency, the simplification and speeding up of building lay-out, detailing, and erection resulting from this method of coordination are of prime importance.

The second type of construction for which the service will be available is pre-fabrication or site fabrication of defense housing with jig cutting and jig assembling of the wood frames. Here, the methods of coordination developed by ASA Project A62 are already in extensive use. Designs of cutting tables and jig assembly tables originally developed by the Modular Service Association are being used with outstanding success. The service offered by the Modular Service Association proposes to extend the coordination of details and the development of jigging equipment to include all building materials that are now available in sufficient quantity. This service is an extension and continuation of the work which the Association has been doing recently in Canada as mentioned in INDUSTRIAL STANDARDIZATION, March, page 67. It would provide complete construction details either for the masonry constructions or for the wood frame defense housing. Some of the methods already developed by the Modular Service Association in cooperation with the Federal Public Housing Authority are shown in an article in the *Architectural Forum*, April, page 199. Similar details are being distributed by the FPHA itself, making the method available to architects and builders throughout the country.

The Modular Service Association intends to



Details of the jig table in the photograph (right) are shown in this drawing



Courtesy Architectural Forum

This photograph shows the FPHA jig table for exterior wall and partition panels and ceiling and roof panels

offer a complete engineering and production service for large housing projects. The contractor will be provided with complete construction details, sectionalized plans itemizing each floor, wall, ceiling and roof panel in the houses, and complete cutting schedules for the precutting of each frame member or piece of material that goes into the house. The service also includes advice about the equipment required and convenient layout of a temporary shop at the building site if such help is wanted.

The Modular Service Association expects this service to be self-supporting. Customers will be charged for direct drafting time and for all field work and traveling expenses and actual costs. A small fee will also be charged, probably based on a percentage of the project contract to cover overhead. Since the Modular Service Association is a non-profit organization, any funds that may be received in excess of current expenses will be placed at the disposal of ASA Project A62 for carrying on the future committee work.

The funds contributed to support the work of Committee A62 by foundations and other agencies are being expended solely for the committee work and are not being used in the development of this new service by the Modular Service Association.

ASA Drops Emergency Projects On Five Toxic Dusts and Gases

The chairman of the ASA Standards Council has approved recommendations that the development of emergency standards on lead and sodium azides, tetryl, TNT, and acetone be discontinued. The recommendations were made to the Council by the ASA Sectional Committee on Allowable Concentrations of Toxic Dusts and Gases (Z37).

The importance of these substances in the production of war materials led the sectional committee to recommend to the ASA in January, 1941, that emergency standards be developed under the ASA Emergency Procedure. Studies carried out by the committee in connection with development of the proposed standards, however, showed that so far as lead and sodium, azides, tetryl, and TNT were concerned, sufficient technical data is not available to write standards at the present time. Extensive research will have to be conducted over a long period of time to obtain such data, the committee found. It also concluded that the experience of industry to date in handling and using these materials has not indicated the necessity of carrying forward the extensive program which would be necessary to secure the essential technical data.

In connection with the proposed emergency standard for acetone, a draft standard was prepared and reviewed by the committee. The review brought out the fact that manufacturers of materials, principally rayon, which use large quantities of acetone, protested that the allowable concentration proposed by the committee would result in seriously interrupting their processes of manufacture unless great expenditures were made for the installation of ventillation and exhaust systems of special design. These manufacturers also expressed the belief that there was insufficient evidence of the toxicity of acetone and they therefore challenged the need for the standard.

As a result of these opinions of the users of acetone, an insufficient number of affirmative votes were received by the sectional committee to warrant submittal of the proposed standard to the ASA for approval.

The manufacturers also pointed out that technical studies were being conducted at the Schools of Public Health of both Harvard and Yale Universities and that these studies would definitely determine the extent of the toxicity of acetone.

The ASA sectional committee, therefore, voted to recommend to the ASA that the proposed standard for acetone be removed from the status of proposed emergency standard. It also recommended that further work on setting up an allowable concentration for acetone be postponed until these studies are completed and additional data are made available for use by the committee.

NBS Issues Information On Fluorescent Paints

A Letter Circular on Luminous and Fluorescent Paints, LC 678, has been prepared by the National Bureau of Standards as a result of numerous requests received by the Bureau for general information on this subject. The two other types of paints, both designed to emit light under certain conditions, are described separately in the circular, although, the Bureau explains, there is no sharp line of demarcation between the two in certain instances.

The Letter Circular does not tell how to manufacture these paints but gives general information about them.

Copies are available from the National Bureau of Standards, Washington, D. C.

General Electric Finds Need For Universal Adoption of

Standard Thicknesses Of Thin Sheet Metals

by H. W. Robb

Standards Department, General Electric Company

WHO is responsible for the number of gage systems used to designate thicknesses of metals? What are the differences between these systems? Why do designers specify different decimal thickness dimensions for strip steel, sheet steel, and brass or bronze when they want approximately the same dimension?

These questions lead to other queries, such as:

1. How many thicknesses are being specified?
2. Are other manufacturers using the same thicknesses?
3. Exactly what, if any, advantage is there to justify an investigation?
4. What tangible benefits will result from standardization?

Although this article will not attempt to answer these questions, nevertheless, each question is sufficiently important to justify serious consideration. A few metal users have already investigated these problems and general interest has been aroused. This interest led to the preparation and adoption last year of the American Standard Preferred Thicknesses of Uncoated Thin Flat Metals[1] by the American Standards Association. Considerable progress has also been made by the ASA Committee on Wire and Sheet Metal Gages (B32) toward the standardization of wire sizes.

Some time ago, the General Electric Company investigated various materials to determine, if possible, certain grades that might be adopted as standards for more extensive use. To accumulate information, data were recorded on thicknesses and other sizes, quantities, costs, and grades of copper, brass, and bronze.

Find Great Number of Thicknesses

As soon as work was started, it was immediately discovered that a far more important subject had been overlooked—the *number* of thicknesses and other sizes in current use. A comparatively short investigation disclosed startling facts—cost, size-selection, and control practices for materials had not kept pace with advances in engineering design, automatic machines, manufacturing processes, time studies, bonus incentives, manufacturing loss analyses, and other devices to reduce direct labor costs.

Many executives consider that every effort must be concentrated on improving machine tools and manufacturing methods. They are under the impression that material is relatively cheap and have the misconception that there is little, if anything, that can be done about material costs, except to purchase when markets are low. As a result, attempts are being made every day to save ¼ cent in direct labor on some item, without proper attention being given to the six, eight, or ten cents that may be wasted on material.

Result in Increased Costs

While important improvements can perhaps be made in ordering in economical lots, investigations show that many increased costs are the result of the *number* of thicknesses and other sizes commonly specified. Demand is spread over so many thicknesses and other sizes that it is impossible to avoid numerous small orders with their attendant quantity-extra charges.[2] Ask your purchasing department the prices of brass, bronze, steel, etc, per pound in quantities of 50, 100, 500, and 1,000 pounds. Compare these prices with base-quantity prices.

In one investigation, where millions of pounds of copper and copper alloys were being used per year, 60 per cent of the orders were found to be

[1] B32.1-1941.

[2] Reference is made to such conditions by R. E. Hellmund and D. F. Miner in the March, 1936, issue of *Product Engineering*.

for less than 500 pounds of material. The most frequent order quantity was 100 pounds. Extended to all material, a reliable estimate, supported by carefully planned check tests, showed that about five per cent of the total basic raw-material cost consisted of extra costs for small quantities of material, resulting directly from the number of thicknesses and other sizes in use.

Considered as a ratio to direct labor, these extra costs for material might equal the ratio of extra labor costs that result from rework and other extra labor—losses that have received special attention by industry for years. If a manufacturer has a diversified line of products and numerous departments and plants, such conditions are likely to exist unless suitable steps have been taken to prevent them.

Why Are So Many Thicknesses in Use?

The question, why are so many thicknesses in use, has many answers. The dissimilar gage-number systems that have been developed for different materials is one answer. Unnecessary liberties taken by designers is another. Availability of special thicknesses, temporarily procured for special large-production items, adds to the collection. Of these, the gage-number systems are particularly important since the inherent unsuitability of gage-number systems for design and manufacturing purposes has caused undue confusion and made improvement difficult.

In view of these circumstances and the investigations that were previously mentioned, the General Electric Company decided that the subject was of sufficient importance to disregard existing gage-number systems. It decided also to disregard the thicknesses used by other industrial companies, and even current stock thicknesses in use within the company. Logically, General Electric turned to the American Standard Preferred Numbers[3] as the practical tool for establishing preferred thicknesses, as was done in the American Standard for Preferred Thicknesses of Uncoated Thin Flat Metals. It was decided to *design to preferability rather than to availability*. At first, an attempt was made merely to distribute copies of the American Standard Preferred Numbers. This did not accomplish any purpose. A cost and stock sheet was then created to show costs and specific preferred thicknesses of individual materials. (Costs are mentioned because much groundwork first had to be done to establish control of the variable elements of material costs, provide for balancing material costs against labor and waste costs, and establish ordering and other manufacturing routine to accommodate preferred sizes.)

[3] Z17.1-1936.

A considerable amount of progress has been made to date, especially since the issue of the American Standard on Preferred Thicknesses. In designing to preferability instead of availability, many designs have been changed to call for preferred thicknesses instead of those heretofore carried in local or warehouse stocks. Where drawings called for the preferred thicknesses, numerous substitutions (rather than changes in drawings) had to be made in order to exhaust existing stocks. Where material was furnished from mills, preferred thicknesses were obtained although purchase orders may have shown differences in ten thousandths of an inch to accommodate existing price schedules or ordering directions. General adoption of the American Standard Preferred Thicknesses would effect simplification in this practice.

The preferred thicknesses of sheet and strip metals are shown in the American Standard B32.1-1941. These thicknesses are a logical series which cover general-purpose industrial requirements with the minimum number of thicknesses.

While there is justification for proceeding independently, if necessary, as General Electric has demonstrated, far greater advantages can be obtained by metal manufacturers and users alike if all industrial companies adopt the American Standard Preferred Thicknesses of Uncoated Thin Flat Metals.

Who Should Take the First Step?

Many users say they have to take what suppliers make or have available, whereas suppliers must furnish the thicknesses that purchasers specify. (Suppliers are prohibited from dictating the thicknesses that fabricators will use.) Every reason exists for fabricators to investigate their practices, to adopt American Standard Preferred Thicknesses on their drawings, and to inform suppliers that they want to obtain American Standard Preferred Thicknesses in the future. In most cases, experience shows that changes can be made immediately. In relatively few instances, even in the case of forming and drawing dies, can there be a justified reason for not changing to preferred thicknesses without delay. Piercing and blanking dies and many drawing and forming dies will accommodate plus or minus 10 per cent change in thickness. In the remaining instances, worn dies can be replaced or a date set for a future change-over.

As a practical suggestion, drawings and purchase orders might specify American Standard Preferred Thicknesses even where they are not immediately available and either indicate wider tolerances or acceptable substitutions. This practice would create a common demand. Satisfactory progress depends upon concerted action.

ASTM Committees Adopt Emergency Alternate Standards

Committees Cooperate with WPB To Help Conserve Scarce Materials

FIVE complete Emergency Standards have been issued by the American Society for Testing Materials since the Society established its Emergency Procedure, it was announced early in May. These emergency standards cover lead-coated and lead-alloy coated copper wire for electrical purposes, hot-dip lead coating on hardware, method for conducting salt spray tests on organic protective coatings, hardness conversion table for cartridge brass, and carbon-chromium ball and roller bearing steels. In addition, emergency alternate provisions have been adopted for more than 42 standards. These alternate provisions can be used by the purchaser as a permissible alternate for the specific application or use provided in the standard. All these alternate provisions and emergency specifications have one aim, to expedite procurement and conservation of critical or strategic materials during the national emergency.

In Committee A-1 on Steel important changes were approved in six specifications covering steel castings, four of these covering material for service at normal temperatures and two for service at elevated temperatures. These specifications are

- Carbon-Steel Castings for Miscellaneous Industrial Uses (A27-39)
- Carbon-Steel and Alloy-Steel Castings for Railroads (Z87-36)
- Alloy-Steel Castings for Structural Purposes (A148-36)
- Carbon-Steel Castings Suitable for Fusion Welding for Miscellaneous Industrial Uses (A215-41)
- Carbon-Steel Castings Suitable for Fusion Welding for Service at Temperatures up to 850 F (A216-41T)
- Alloy-Steel Castings Suitable for Fusion Welding for Service at Temperatures from 750 to 1100 F (A217-41T)

In addition to these, a change in the specifications for nuts for high-temperature service (A194) provides that, during the emergency, bar nuts will be acceptable in place of hot-forged nuts for certain grades since forged nuts are not normally obtainable now.

To facilitate conservation of manganese, the committee is deleting the manganese requirement from three of its specifications covering spring wire—hard-drawn (A227), oil-tempered (A229) and valve spring quality (A230), since the quality is amply covered by the physical requirements.

To cooperate closely with a National Emergency Steel Technical Advisory Committee on Rail and Track Accessories which is developing lists of national emergency specifications, the ASTM Steel Committee has approved changes in its Specifications for Open-Hearth Carbon-Steel Rails (A1-39) and in the Specifications for Steel for Tie Plates (A67-33) and for Hot-Worked High-Carbon Steel Tie Plates (A241-41), and requirements for heat-treated carbon and alloy-steel track bolts (A183), all of which are in the interest of expediting production or conserving important materials.

A new emergency standard on Ball and Roller Bearing Steels resulted from the work on National Emergency Steel Specifications under the WPB jointly sponsored by the American Iron and Steel Institute, the Society of Automotive Engineers, and the American Society for Testing Materials.

Corrosion-Resisting Steels

Through action of Committee A-10 on Iron-Chromium-Nickel and Related Alloys emergency changes have been made in the requirements for corrosion-resisting sheet, strip and plate (A167) and corrosion-resisting material for fusion-welded pressure vessels (A240).

Lead Coatings on Hardware

To make available promptly standard requirements for lead-coated hardware and thus effect conservation of other metallic coating materials, ASTM Committee A-5 on Corrosion of Iron and Steel has just completed a new emergency standard carrying the designation ES-2 which gives definite requirements on weight of coating (to be not less than 30 mg per sq in. of surface), continuity of coating, and related requirements.

Babbitt Metal and Solder Metal

Of the twelve grades of white metal bearing alloys ("Babbitt Metal") covered in the ASTM

specification B23-26 only six, number 7 through 12, could be furnished after the War Production Board ordered discontinuance of bearing metals with more than ten per cent tin, except with special permission. After Committee B-2 on Non-Ferrous Metals and Alloys had circulated its group, certain commercially available alloys with ten per cent or less tin were set up as alternates. These are known to have been used successfully in a number of applications and in the opinion of the committee members incorporate various desirable properties.[1]

Somewhat similar action was taken on Soft Solder Metal (B32-40T) in which field the Government forbade the use of solders with more than 30 per cent tin except with special permission. Tin-lead alloys would still be applicable including the following: 30 tin to 70 lead; 25-75; 20-80; 15-85; 10-90; 5-95. The committee has suggested as an emergency provision that certain alloys can be used as substitute solders.

Copper and Copper Alloys

The widespread use in ordnance and other related categories of products covered by Committee B-5 specifications has made the work unexcelled in importance. Three new ASTM specifications have recently been developed by this group—one covering aluminum bronze sheet and strip (B169), another oxygen-free electrolytic copper wire bars, billets and cakes (B170), and the third, copper-alloy condenser tube plates (B171). The aluminum bronze material covered by these specifications B169 is commonly used for drawing, forming, stamping, and bending. Two alloys are covered—a 92 to 96 per cent copper, 4 to 7 per cent aluminum, maximum iron 0.50 per cent, designated Alloy A, and Alloy C, with a 90 to 93 copper, 7 to 9 aluminum, and maximum iron 0.50 per cent.

In addition to these new specifications, Committee B-5 has recently had approved as Emergency Provisions a number of modifications in several casting specifications covering the alloy —copper 88 per cent, tin 8 per cent, zinc 4 per cent (B60); composition brass or ounce metal castings (B62); tin-bronze and leaded tin-bronze (B143); high-leaded tin-bronze (B144); leaded red brass (B145); and aluminum-bronze sand castings (B148). In practically every case alternate alloys have been set up with chemical requirements such as to conserve important strategic or critical alloys—in particular tin—but in a number of cases savings in copper are effected. At the same time, tensile requirements have been lowered somewhat, but not appreciably.

A basic specification for sand casting work is the standard for copper (B30). A number of changes have been incorporated in the compositions in this standard and two alternate alloys for the existing aluminum bronze Grade A have been provided, one having a decreased aluminum content, the other slightly increased aluminum with reduced copper and higher permissible iron.

One important factor in connection with all of these changes is the fact that with the alternate alloys maximum use can be made of scrap and the amount of new copper to be added is materially decreased.

Die Castings

Due to the important research work it has carried out over a period of years and the development of recognized standards of quality, the work of ASTM Committee B-6 on Die-Cast Metals and Alloys has had marked influence in stimulating the use of die castings, both the aluminum and zinc-base types. In order to effect as much saving in aluminum as possible, emergency changes have been approved in the zinc-base specifications (B86) by setting up alternate alloys, reducing the aluminum in one case from 3.5 to 4.5 to 1.75 to 3.50, the other chemical requirements remaining the same. The new alloys have reduced physical properties.

In the aluminum-base specification (B85), alloy No. VII, a 4 per cent copper, 5 silicon, 91 aluminum composition has been set up as an alternate alloy with a lower iron content. This is suitable for casting by the cold process method.

Cartridge Brass—Hardness Conversion Relations

As a new emergency standard the Society has just issued a hardness conversion table for cartridge brass which gives relations between diamond pyramid hardness, Rockwell hardness, and Brinell hardness, the standard being designated ES-4. This work has been handled in a special section in the committee on indentation hardness of ASTM Committee E-1 on Methods of Testing, and in view of the pressing need for information on cartridge brass, it was the first material studied. Heat-treated steels are now being investigated and other materials will follow.

Lead-Coated Copper Wire

Intensive work by Committee B-1 on Copper and Copper-Alloy Wire for Electrical Conductors has resulted in a new emergency specification ES-1 for Lead-Coated and Lead-Alloy-Coated Copper Wire for Electrical Purposes. These specifications will, when they are widely used, effect considerable savings in certain critical and strategic elements—such as tin—used for coatings.

[1] The emergency provisions and emergency alternate specifications can be obtained from the American Society for Testing Materials, 260 South Broad Street, Philadelphia.

Increasing use of salt spray tests on organic protective coatings for specified properties has led ASTM Committee D-1 on Paint, Varnish, Lacquer, and Related Products to agree as an emergency matter on a standard procedure similar to the method already issued by another ASTM committee in the non-ferrous field—Salt Spray Testing of Non-Ferrous Metals (B117-41T).

In view of the urgent need with respect to pigments, Committee D-1 has recommended an emergency provision in the requirements covering basic sulfate white lead (D82-41) which will alter the lead oxide per cent in the dry pigment to read 11.0 to 28.0 per cent instead of 15.0 to 28.0. It is estimated that this change may increase available products by about 25 per cent.

Rubber Insulated Wire and Cable

The first of a number of emergency changes developed by ASTM Committee D-11 on Rubber Products has been made in the requirements for insulated wire and cable: Class A0, 30 per cent Hevea rubber compound (D27) which provides that the conductor can be coated with tin, lead, or lead-alloy, and then reference is made to the new emergency specifications for lead-alloy coated copper wire ES-1, which gives tests for continuity and related properties. A number of the emergency modifications relate to the cable cotton tape, one of which provides that instead of being frictioned on both sides and thoroughly filled with a rubber compound, it "shall be treated on one side with an insulating compound of a nature not injurious to the wire insulation." Since these specifications are referred to in three other standards for insulated wire performance rubber compound (D353), heat-resisting rubber compound (D469), and ozone-resistant type insulation (D574), the changes also affect these specifications.

The committee also considered modifications in the specifications for cotton rubber-lined fire hose (D296) and after further study in the subcommittee it is expected emergency changes will be approved.

Soaps and Other Detergents

One of the most active ASTM committees in the development of standard specifications and tests has been Committee D-12 on Soaps and Other Detergents. Many of the products covered in its specifications have been affected by rulings of the Government in connection with glycerol content, fat stock, and so forth. To effect saving of critical materials Committee D-12 has approved a number of emergency changes. As an example, in the requirements for white floating toilet soap (D499-39) the word "white" is to be deleted wherever it occurs and the requirement which normally does not permit any rosin, sugar, and foreign matter is to be revised to permit maximum rosin of 10 per cent. Changes are being made in Specifications for Milled Toilet Soap (D455-39) and Specifications for Built Soap, Powdered (D533-41).

In connection with certain materials, as salt-water soap (D593-40T), since no substitute is available at present, the various producers of this soap have signified their willingness to endeavor to make up products which might be suitable for use in salt water. If these new products prove acceptable, Committee D-12 on Soaps and Other Detergents will prepare specifications based on the product or products found to be most suitable for this use.

Two specifications cover soaps containing olive oil—Chip Soap (D630-41T) and Solid Soap (D592-41T). The references to olive oil are to be eliminated. As an emergency matter the manufacturers can substitute any oil that will produce a soap conforming to the chemical analysis prescribed in the chip soap. The titer requirements of the mixed fatty acids for type A which is the powdered material is being changed from the present range of 16 to 26 C to read "26 C maximum." A similar change is incorporated in D592. In both specifications the other chemical requirements are remaining unchanged. These cover moisture and volatile matter, free alkali, matter insoluble in water, iodine number, anhydrous soap content and related quality factors.

Decision to submit to the American Standards Association for approval two of the specifications under the program of Committee A-7 on Malleable-Iron Castings is a recognition of the widespread use and authoritativeness of these two standards, the committee reports. The standards are Malleable Iron Castings (A47-33) and Cupola Malleable Iron (A197-39). Copies of these standards may be obtained from the ASTM headquarters, 260 So. Broad Street, Philadelphia, Pa.

Welding Society Also Approves Standards

In addition to action taken by the ASTM on emergency standards, two important standards were approved in April by the American Society for Testing Materials jointly with the American Welding Society covering Iron and Steel Arc-Welding Electrodes (A233-42T) and Iron and Steel Gas Welding Rods (A251-42T). Two other ASTM standards cover Welded and Seamless Steel Pipe Piles (A252-42T) and Tentative Method of

End-Quench Test for Hardenability of Steel (A255-42T). Specifications A233 and A251 were the result of close cooperation by the American Welding Society's Filler Metal Specifications Committee and ASTM Subcommittee XXI on Steel Welding Electrode and Welding Rods. They have received the joint approval of these two groups.

Supplement to Elevator Standard Includes Revisions and Corrections

Committee decides not to revise standard completely because of war emergency

A SUPPLEMENT to the American Standard Safety Code for Elevators, Dumbwaiters, and Escalators (A17.1-1937) has been approved by the American Standards Association in place of the full revision of the standard which was scheduled for this year. The supplement was prepared by the ASA sectional committee and submitted to the American Standards Association by the American Society of Mechanical Engineers, the American Institute of Architects, and the National Bureau of Standards, joint sponsors for the work of the committee. The supplement is designated A17.3-1942.

Under normal conditions the year 1941 would have been the year for development of a complete revision of the elevator code, based on new technical data and the experience accumulated by users of the 1937 edition. Despite the fact that considerable time and thought had gone into consideration of a full revision of the standard, however, the committee decided that in view of the national emergency it would be inappropriate to devote the amount of time necessary to prepare such a revision.

In order to make available the experience obtained from the use of the current edition, and also to include a few revisions of rules and interpretations and corrections of printers' errors, a supplement was prepared by the committee. The supplement is published as a companion document to the 1937 code. Copies of the code and the supplement in the same binder are being prepared, but separate copies of the supplement are also available to those who already have copies of the 1937 standard.

The sectional committee has decided not to prepare another general revision of the elevator code until after the national emergency is over.

Copies of the American Standard Safety Code for Elevators, Dumbwaiters, and Escalators (A17.1-1937) bound with the new supplement (A17.3-1937) are available from the American Standards Association at $1.25. Copies of the supplement alone, bound separately, are 25 cents.

Three Standards Approved on Structural Steel

To supplement standards for structural steel previously approved by the American Standards Association, the ASA on request of the American Society for Testing Materials has approved three additional standards in this field. These are:

- Specifications for Low Tensile Strength Carbon-Steel Plates of Structural Quality for Welding (ASA G40.1-1942; ASTM A78-40)
- Specifications for Structural Silicon Steel (G41.1-1942; ASTM A94-39)
- Specifications for High-Strength Structural Rivet Steel (G42.1-1942; ASTM A195-41)

These three standards were recommended to the ASTM for ASA approval by the well-known ASTM Committee A-1 on Steel.

The standards on structural steel approved some years ago by the ASA and which these standards supplement are:

- Specifications for Mild Steel Plates (ASA G20-1939; ASTM A10-39)
- Specifications for Structural Rivet Steel (G21-1939; ASTM A10-39)
- Specifications for Steel for Bridges and Buildings (G24-1939; ASTM A7-39)

In connection with their approval as American Standard, the American Society for Testing Materials has been granted proprietary sponsorship.

1942 SAE Handbook Includes Important New Standards

Steel compositions agreed on by SAE and AISI, screw thread classifications and dimensions, and aeronautical equipment and parts are among new standards in SAE Handbook for use in war emergency

NEW standards for steel, screw thread classifications and dimensions, and aeronautical equipment and parts, many of which were developed specifically to help in the war production effort, are included with other new and revised standards, in the *SAE Handbook* for 1942 just published.

The SAE Steel Compositions which appear in the new *Handbook* mark an important milestone in the history of steel specifications, since they were developed through the cooperation of the Society of Automotive Engineers and the American Iron and Steel Institute.

The joint action was based on the following:

(*a*) A single numbering system

(*b*) Composition range for each common number should be identical

(*c*) None of the compositions identified with an SAE symbol should be altered without joint consultation.

As a result of this cooperation, both the SAE and the AISI found it desirable to alter some of their basic numerals. In order that the 1300 series might be reserved for the alloy types of manganese steel, the SAE agreed to identify the free-cutting X 1300 steels as the 1100 steels in the 1942 *Handbook*. On the other hand, the AISI introduced seven new carbon steel numbers and 13 additional numbers to meet SAE requirements. The AISI also changed their numbers on four alloy steel grades.

The number of SAE steel compositions has been increased from 74 to 79. This increase, in spite of the general trend during the national defense to reduce specifications, was brought about by eliminating steels of decreasing tonnage but including others of increasing tonnage, such as the "amola" types and certain agricultural and aircraft-engine types. This program has completely harmonized the entire list of compositions promulgated by SAE in the field of automotive steels, between the steel industry and the major user industries.

Emergency List May Replace Specifications

It is expected, however, the SAE announces, that a reduced war emergency list of steel compositions in the low alloy group developed last winter by representatives of the SAE and AISI at the request of OPM, and the 4000 series of standard steels may replace some 43 of the 47 SAE alloy steels which are included in the 1942 issue of the *SAE Handbook*. These "Alternate" or "National Emergency" Steel Specifications were released for publication by the War Production Board on March 7. In connection with use of the standards, the WPB urged as a basis for conservation of scarce materials:

"Use carbon steels as the first alternate. If it is impossible to choose a carbon range suitable for the product, then choose one of the alloys with as little scarce alloying elements as possible."

SAE Journal Analyzes Steel Standards

A thoroughgoing analysis of the work on standardization of steel compositions, explaining the development of the National Emergency Steels, is published in the *SAE Journal* for April. It includes the list of National Emergency Steel Analyses.

In addition to the standards for compositions of steel a standard method for determining hardenability has also been completed and is included in the new *SAE Handbook*. The standard recommends that the Jominy End Quench Test be used as the standard method of testing hardenability and that hardenability be expressed in terms of distance from the quenched end to which a certain hardening occurs. The procedure prescribed for conducting the hardenability test and recording the results to conform with the SAE Recommended Practice are included in this specification. Also included are standard charts for plotting hardenability test results and for predicting hardness U curves in various sized rounds.

One of the most important sections in the new *SAE Handbook* is that which covers the Aeronautical Standards and Recommended Practices and the Aeronautical Material Specifications.

The Aeronautical Material Specifications, 194 of which have been completed to date, are complete procurement specifications for materials used in the manufacture of aircraft, aricraft engines, propellers, and other aircraft accessories. Although these specifications are not included in full in the *Handbook* they are listed and described. They can be obtained separately from the SAE. They include requirements regarding form, quality, test reports, etc, and are complete enough to be used as the basis for acceptance or rejection of purchased materials and parts. The composition limits of the material specified and other requirements in the specifications are based, so far as feasible on general standard materials, but are written to meet the specific needs of the aircraft industry. In many cases they are more rigid than those that are satisfactory for more general purposes. In addition to materials specifications, standards covering processes and methods essential to the fabrication of aircraft are also published in the AMS series.

SAE Develops Aeronautics Standards

The Aeronautical Standards and Recommended Practices, on the other hand, are dimensional standards developed by the SAE Aeronautics Division under an assignment from the Office of Production Management in 1941. Under this assignment the SAE was given responsibility for development of standards for parts used in the design and production of aircraft engines, propellers, and aircraft accessories and equipment. Each standard is assigned an individual identification number preceded by the letters "AS" signifying Aeronautical Standard. Each Recommended Practice is prefixed with the letters "ARP", signifying Aeronautical Recommended Practice. Fifty-three of these Aeronautical Standards and Recommended Practices have been completed. Several others are in the final stages of development and approval. These, too, are listed in the *Handbook* but may be ordered separately.

Copies of the *SAE Handbook* may be obtained from the Society of Automotive Engineers, 29 West 39th Street, New York for $5.00.

The series of Screw Thread Standards, published in full in the *Handbook*, of which many conform to the American Standard on Screw Threads (B1.1-1935), include provisions for special aeronautical threads which are not included in the American Standard. In addition, tables for the Extra Fine, the 16 Thread Series, Class 2, and the Special Pitch Series are SAE Standard only. In Table 1, Standard Series of Screw Threads, asterisks indicate which thread dimensions are Aeronautical Standards.

One of the new standards included in the 1942 *Handbook* furnishes a method of inspection and testing which is expected to help the U. S. Army to develop methods of suppressing radio noise. It provides a standard reference screen room in which data can be obtained on each type and size of vehicle.

Other new standards include a method for 36-hour oil oxidation test, flat pad mountings for engines, color specifications for electric lamps, electroplating practice for non-ferrous metals, and rubber compounds for engine mounts which is the first standard completed by Technical Committee A on Automotive Rubber Products (except tires).

The Society of Automotive Engineers is a Member-Body of the American Standards Association and for many years has cooperated in the work of the ASA. It is now sponsor for ten ASA sectional committees, and is represented on 28 others. A partial list of American Standards of interest to the automotive industry is included in Section 10 of the *Handbook*.

Safety Standards Will Control U. S. Mine Inspection

New tentative coal-mine inspection standards have just been prepared and issued by the U. S. Bureau of Mines as a guide for the Federal inspection of coal mines in the United States. It is believed, the Bureau announces, that compliance with the new standards will eventually be possible in most mines. In many instances, however, the Bureau continues, "objections will be raised to them owing to long-established mining customs and practices that are inherently of dubious safety and to a natural inclination to oppose change. In other instances there will be valid objections due to conditions not foreseen at the time these standards were prepared." There may also be substandard conditions and practices due to original mine layouts that it is not practicable to change during the lifetime of the mine, the Bureau points out, but in such instances it is likely that some effective measures are or can be taken toward lessening hazards.

The standards are contained in Information Circular 7204, February, 1942, issued by the Bureau of Mines, U. S. Department of the Interior.

How Three Companies Save With Standard Packages

The following abstracts from papers presented at the American Management Association's Twelfth Annual Conference and Exposition on Packaging, Packing, and Shipping show how three companies in different fields have brought about a reduction in number of sizes, weights, and styles of the packages and shipping containers for their products, and through standardization have produced more satisfactory containers at less cost. The AMA Conference was held in New York April 14, 15, and 16. The session at which these papers were presented was presided over by W. E. Braithwaite of the Division of Simplified Practice, National Bureau of Standards. In opening the session Mr. Braithwaite explained the work of the Simplified Practice Division and offered the services of his Division to any group interested in developing Simplified Practice Recommendations.

Drastic Reductions in Package Styles Display Merchandise More Effectively

by Clinton K. Royce

Advertising Manager, Wholesale Division, Carson, Pirie, Scott & Company, Chicago.

STANDARDIZATION and simplification of merchandise containers was never more keenly sought after nor more urgently needed than now. Everywhere we turn we face restrictions and rules curbing the types and weights and character of the materials which we can use for the packaging of our products. . . .

When our 88-year old organization was celebrating its eighty-third birthday five years ago we placed in operation a plan to develop a program of complete standardization and simplification of the materials used in the packaging of our private brands. [Several thousands of privately branded merchandise items are distributed by the Carson, Pirie, Scott Company.] This was, we believe, the first attempt of a wholesale distributor of general merchandise lines to carry out a program of complete standardization. There had been other minor attempts at package uniformity within an individual department but until 1936 nothing had been done to bring the variety of items such as we handle under a program of complete standardization and uniformity. . . .

Whether or not this idea of standardization and simplification could have been sold to the members of our firm by someone outside the organization is problematical. It came about through my having recommended to our merchandise division personnel shortly after my appointment to the position of advertising manager of our wholesale division that such a program be given consideration in a general way. . . . It was decided to start with the silk and rayon lines of women's and children's lingerie in our underwear departments. We were shipping these lines to our trade under six different brand names involving six different designs and color combinations of packaging and in 61 different sizes of shelf boxes. A research revealed that only two of these six brands had consumer acceptance. Hence we discarded four of the brand names.

Next, we found that by refolding the merchandise contained in these boxes and shipping the quantities contained therein to conform with retailers' ideas we could eliminate 58 of the 61 sizes of boxes, doing the job in three sizes of shelf

Courtesy Carson, Pirie, Scott & Co.

One box replaces six formerly used for packing ladies' gloves

packages, and manufacturing these boxes in uniform length and width and establishing only a differential in depth. The largest box was 2 in. in depth; the medium-sized box 1½ in. deep; and the smallest 1 in. in depth. . . .

Retail merchants welcomed the change. Our new containers were uniform in width and in length. They fit retail shelves more uniformly and presented a much more compact and orderly appearance to the consumer as she viewed the lines on the retailer's shelves.

Next, we tackled our lines of men's hosiery. We found that ten different qualities and style of men's hose were being packaged in six different sizes of boxes done in six different styles and color combinations of wraps. The hose themselves employed the use of four different styles and colors of toe seals and seven different styles and colors of rider tickets.

We found there was no need for more than three sizes of boxes since the goods were packed either ¼ doz., ½ doz., or one doz. to the box.

There was no need for more than one style of toe seal and the rider tickets could be more uniform and any differential in quality shown through copy or imprint.

The new boxes were all done in one color combination (two shades of green) and the rider tickets and toe seals matched the boxes in design and color, as did also the paper bands which were used to band the contents of the box.

Our shorts and pajama line was going to our trade in 16 different sizes and two different colors of boxes with nine different designs and colors of labels attached thereto. We found that the whole job could be done in six different sizes of boxes with all labeling uniform and all brand names retained because of their promotional value.

One Box Replaces Six

Our ladies' gloves were being shipped to our trade in six different sizes of boxes under four different colors and designs of labels, the boxes themselves being wrapped in three different designs of embossed paper. We found that one box would adequately handle all merchandise formerly shipped in six different sizes of shelf packages.

We found in our curtain and drapery department that ruffled curtains and panels were being shipped to our trade in nine different sizes of boxes made in nine different constructions under three different colors and sizes of labels. A little study showed the job could be done in two different sizes of boxes of uniform design and color. . . .

In our Notion and Small Wares Department where, of course, a greater variety of merchandise items was handled than in any other department in our wholesale division, nothing was uniform. . . . In an attempt to prove our point that even manufacturers' lines could be simplified, we started with our dress shield line which was supplied by one of the larger manufacturers in this field. On approaching this particular manufacturer, we were informed that simplification had been carried to the utmost and that our line of shields required a minimum of six different sizes of boxes. We promptly did the job with three and today we are doing it with two.

Before and after redesigning the boxes used for dress shields

In our full-fashioned and seamless ladies' hosiery department we were shipping our merchandise in 11 different color combinations of boxes under 11 different brand names. Now we find one taking the place of 11.

New Design Is Better

In our blanket department we found that it was customary for the mills to assess a charge of 10 cents a blanket or $100 a thousand for boxing the merchandise and we were taking delivery of goods in a hodge-podge of containers, none having any brand identity appearing on them. We were paying as much money as a box would cost attractively printed. We therefore designed a box in which simplification played a most important part and yet none of the rigidity and carrying strength of the box was sacrificed. This container was developed through the simple process of running the grain lengthwise on the covers of the box and crosswise on the boards, thus giving us double end wall and single side wall construction on the covers while we had double side walls and single end walls on the bottom. We had three thicknesses of board in all walls of this box after the cover was placed on the bottom and the fact that the grain in the bottom was running crosswise in covers and bottoms gave us a much more rigid box than did the double side and end wall containers with which we had been furnished before. The saving in board made it possible for us to bring these containers under our program of uniformity and design and we found that two sizes of boxes would be sufficient where we were using eight sizes previously.

The packaging standardization programs described by Clinton K. Royce, H. F. Loughlin, and A. W. First at the AMA Packaging Conference are particularly interesting in view of the request received by the ASA in April for approval of a series of standard packages as an American Emergency Standard. The request for the project was sent to the ASA by the Bureau of Industrial Conservation of the WPB. It suggests that a series of packages for electronic tubes proposed by the RCA Manufacturing Company and other manufacturers of electronic tubes, if approved as an American Emergency Standard, would help the war production effort.

Work on the proposed Emergency Standard is now going forward.

Saving in Materials Results From New Standard Box Design

by H. F. Loughlin

Purchasing Agent, Oneida, Ltd.

OUR company woke up to the fact that our standards had to be changed to meet present war conditions, because for over a year we have had a Government inspector in our plant. He did not know how our material was actually to be used in the field today so he had to depend on the old standards book. As a result he was rejecting too great a quantity of material to suit us. One day last summer his superior officer appeared on the job—a Colonel who was actually using the material in the camps. He was quite surprised at the amount of our rejects. After a careful investigation he passed most of the material the inspector had rejected, because he knew where it was to be used, and how. The outmoded standards book which the young inspector referred to was all right in peace time but it needed revision. Now he has a new standards book and things are going along fine.

This gave us an idea for our commercial lines and . . . we insisted that our Sales Department prove to us whether we needed a different color scheme for each of our top lines—in other words, for 171 different boxes.

Our boxing problem is a little more difficult than for the average commodity inasmuch as all board, glue, and papers, and even the ink, must be free from elements which may cause deterioration or corrosion on our product. Therefore, with the shortage of box board and the chemicals used for treating it, as well as other materials, we were having a great deal of trouble meeting our standards.

Our old standards called for a different colored

gift box with a protective outside coat and identification label. . . . A tremendous saving was effected by the elimination of the gift boxes and by using instead an attractive gray standard package with an embossed seal on top for each different line. . . . We estimate our savings to be about 20 per cent by this standardization, and the quality of the package is in no way affected. . . .

Under our old standards we had been led to believe that for added protection and strength we had to use a full telescope cover and thumb notch but by cutting the cover depth ¼ in. we were able to save a considerable tonnage of board. Better standards of box making and board making today made our new box strong enough. This saving amounted to real dollars during the course of a year in cutting the transportation cost to us on prepaid shipments.

Standard Shipping Container Weighs Less, Saves Materials, Cost, and Freight

by A. W. First

Purchasing Agent, Bayuk Cigars, Inc.

WE were using and had used for many years solid fibre, 100 point, overlapped, slotted shipping cartons that required stitching machines to close the bottoms and tops at the overlaps—this operation consumed a considerable quantity of stitching wire. For the inner protection paddings we used, both on tops and bottoms, folded "Buffer" corrugated pads as well as corrugated flat "Buffer" pads between each row of boxes packed in the cartons. The total weight, empty, of that shipping container, including inner protection paddings, was 12½ lb. These cartons when packed and ready for shipment weighed about 100 lb.

After elimination by trial and test shipments it was decided and proved that a corrugated regular slotted carton sealed by an automatic gluing machine should be used in place of the 100 point, solid fibre, overlapped and stitched shut carton. The scored and folded top and bottom inside "Buffer" pads were omitted and in their place we simply used a flat, straight, corrugated, single pad, the same as previously used between each row of boxes in carton. The extra cushion effect of the flaps at top and bottom on the corrugated carton which we adopted permitted that change.

Reduces Weight of Box

All this reduced the total weight down to 6¼ lb per empty shipping carton compared with the former 12½ lb—a saving of 50 per cent in weight of board. This corrugated carton carries our products to destinations with ample protection—it saved 1,600,000 lb of board materials per year—about 800 tons on one item. The simplified shipping carton eliminated our use of stitching wire and does not have the stitch indentations in top and bottom. The new carton is smoother and neater in appearance; it permits quicker handling in our packing and shipping departments; it costs less; and naturally it saves on freight. . . .

On its feature product, "Phillies," Bayuk had used for years boxes and cans to hold 25 cigars; boxes and cans to hold 50 cigars; and packages holding five cigars. Through the abandonment and lessening of production of various packages, Bayuk has concentrated on one standard package of 50 cigars and that package too has gone through the procedure of simplification and saving of materials. The caliper and thickness of cardboard used has been lightened 32 per cent with consequent saving of cardboards. Bayuk is now experimenting with this package and believes that an additional saving of 25 per cent can be effected in this package of 50 cigars.

ASA Withdraws Approval Of Cement Standards

As a result of recommendations from the ASA Sectional Committee on Portland Cement, endorsed by the ASTM (sponsor), the American Standards Association has withdrawn approval of American Standard Specifications for Portland Cement (A1.1-1931) and American Standard Methods of Sampling and Testing Portland Cement (A1.2-1933). This action recognizes developments in cement technology and withdraws approval of standards that have become obsolete. Recent activities in ASTM Committee C-1 on Cement have led to the development of new standard specifications and methods of test. On these, however, the sectional committee has not yet taken favorable action for submittal of the latest revisions to ASA. It is possible that action recommending submittal may be forthcoming from the sectional committee some time this year.

Standards Issued by Associations and Government

(See "ASA Standards Activities", page 134, for new American Standards and progress on ASA projects)

For the information of ASA Members, the American Standards Association gives here a list of the standards received during the past month by the ASA Library for its classified files. With the increasing amount of material being received it has been decided to eliminate from the monthly list a few of those standards which may not be so important to ASA Members, such as Federal Specifications for foods. The list below therefore, includes only those standards which the American Standards Association believes will be of greatest interest to Members in connection with their war production.

The standards listed may be consulted by ASA Members at the ASA Library, or copies may be obtained from the organization issuing the standard. Addresses of these organizations are given for your convenience.

Associations and Technical Societies

Air Conditioning and Refrigerating Machinery Association (Southern Building, Washington, D. C.)

ACRMA Interim Equipment Standards: Freon—12 Water and Brine Coolers; Forced-Circulation Air Coolers for Commercial and Industrial Refrigeration Feb 1942 30¢

American Petroleum Institute — Department of Accident Prevention (50 West 50th Street, New York, N. Y.)

Cleaning Petroleum Storage Tanks: Section A—Crude-Oil and Unfinished-Products Tanks; Section B—Gasoline Tanks API Accident-Prevention Manual No. 1-A and 1-B March 1942 25¢ each section

American Society of Agricultural Engineers (St. Joseph, Michigan)

ASAE Standard on Power Take-Off and Drawbar Hitch Locations for Agricultural Tractors and Machines Revised ed Aug 1941 10¢

American Society of Refrigerating Engineers (50 West 40th Street, New York, N. Y.)

ASRE Proposed Standard Methods of Rating and Testing:

Water and Brine Coolers No. 24 15¢

Forced-Circulation Air Coolers for Commercial and Industrial Refrigeration No. 25 15¢

Water-Cooled Refrigerant Condensers No. 22 15¢

Refrigerant Compressors No. 23 20¢

American Society for Testing Materials (260 South Broad Street, Philadelphia, Pa.)

ASTM Emergency Alternate Provisions in Standard Specifications for:

Carbon-Steel Castings for Miscellaneous Industrial Uses EA-A27

Carbon-Steel and Alloy-Steel Castings for Railroads EA-A87

American Society for Testing Materials

Emergency Alternative Provisions (Continued)

Alloy-Steel Castings for Structural Purposes EA-A148

Carbon-Steel Castings Suitable for Fusion Welding for Miscellaneous Industrial Uses EA-A215

Insulated Wire and Cable: Class AO, 30 per cent Hevea Rubber Compound EA-D27

ASTM Emergency Alternate Provisions in Tentative Specifications for:

Rope-Lay-Stranded and Bunch-Stranded Copper Cables for Electrical Conductors EA-B158

Association of American Railroads—Operations and Maintenance Department, Mechanical Division (59 East Van Buren Street, Chicago, Ill.)

Manual of Standard and Recommended Practice: 1942 list of revisions and additions Complete set of revised pages $5.00 (To Members $2.50)

Metal Cutting Tool Institute (410 Asylum Street, Hartford, Conn.)

Standard Tap and Die Catalog: 16 revised pages Revisions effective Jan 1, 1943

National Paint, Varnish and Lacquer Association, Inc.—Scientific Section (Washington, D. C.)

U. S. Government Paint Specifications, List of (superseding Circular 627) Circular 635 March 1942

Underwriters' Laboratories, Inc. (161 Sixth Avenue, New York, N. Y.)

Performance of Rubber Insulation of Building Wire in One-Year Oven Tests No. 25 March 1942

United States Steel Export Company (30 Church Street, New York, N. Y.)

Simplified Structural Steel Shapes (approved by OPM) Superseding USS Structural Sections and Pocket Companion, as of Feb 1, 1942

United States Government

National Bureau of Standards (Washington, D.C.)

(Copies Available from Superintendent of Documents, Government Printing Office, Washington, D. C.)

Low-Cost Glazes for Structural Clay Products Circular C436 March 1942 10¢

Physical Properties of Dental Materials Circular C433 February 1942 75¢

Commercial Standards

List of Commercial Standards, revised to April 1, 1942 Letter Circular LC691 (supersedes LC-676)

In Print (Copies Available from Superintendent of Documents, Washington, D. C.)

Artists' Oil Paints CS98-42 5¢

Simplified Practice Recommendations

List of Simplified Practice Recommendations, revised to April 1, 1942 Letter Circular LC-687 (supersedes LC-670)

Circulated to Industry

Files and Rasps (revision of R6-40)
Wire Diameters for Mineral Aggregate Production Screens (revision of R147-33)

In Print (Copies Available from Superintendent of Documents, Washington, D. C.)

Eaves Trough, Conductor Pipe, and Fittings, and Ridge Rolls R29-42 (supersedes R29-39)

Corrugated and Solid Fiber Boxes for Canned Fruits and Vegetables R146-41 (supersedes R146-38)

Pipe Fittings R185-42

Federal Specifications Executive Commitee (U. S. Treasury Department, Washington, D. C.)

Federal Specifications

(Copies Available from Superintendent of Documents, Government Printing Office, Washington, D. C.)

The date after the title of the specification indicates when it becomes effective.

Ammonia, Aqua (ammonium-hydroxide); technical (Amendment 1) O-A-451 July 15, 1942

Bandages; gauze, roller, plain (Amendment 1) DDD-B-61a July 1, 1942

Beeswax; technical-grade (new) C-B-191 July 15, 1942

Belts and Belting; flat, leather, vegetable-tanned (superseding KK-B-201) KK-B-201a July 15, 1942

Benzol (benzene); technical-grade (new) VV-B-231 July 1, 1942

Blasting-Apparatus (machines, blasting; galvanometers and rheostats for testing blasting circuits and machines (new) W-B-411 June 1, 1942

Denture-Base-Material (acrylic resin or mixtures of acrylic and other resins) (Amendment 1) U-D-226 July 1, 1942

Depressors, Tongue; wood (new) GG-D-226 July 1, 1942

Ferromolybdenum (superseding QQ-F-171a) QQ-F-171b July 1, 1942

Goggles; eyecup, impact-resisting (chippers', grinders', etc.) (superseding GGG-G-501) GGG-G-501a July 1, 1942

Federal Specifications (Continued)

Hose; gasoline, rubber-metal (Amendment 2) ZZ-H-466b July 15, 1942

Hydrometers; syringe (for lead-acid storage batteries) (Amendment 1) GG-H-941 July 1, 1942

Packing; flax-tow (superseding HH-P-106) HH-P-106a July 1, 1942

Paper; index (superseding UU-P-258) UU-P-258a July 1, 1942

Pipe; cement-asbestos (Amendment 2—superseding Amendment 1) SS-P-351 July 1, 1942

Powder; scouring (for) highly polished glass (superseding P-P-596) P-P-596a July 15, 1942

Receptacles, Waste-paper; fiber, office and lobby (Amendment 2) LLL-R-191a July 15, 1942

Slides; glass (for microscopy) (Amendment 1) GG-S-446 July 1, 1942

Soap:
- chip (new) P-S-566a July 15, 1942
- grit, cake (superseding P-S-571) P-S-571a July 15, 1942
- laundry, ordinary, bar (superseding P-S-591) P-S-591a July 15, 1942
- toilet, liquid (superseding P-S-618) P-S-618a July 15, 1942

Solder; silver (superseding QQ-S-561b) QQ-S-561c July 15, 1942

Tape, Gummed; mending, reinforcing and securing (superseding UU-T-101a) UU-T-101b July 1, 1942

Emergency Alternate Federal Specifications

(Prepared in collaboration with the War Production Board)

Bandages; plaster of Paris (superseding E-GG-B-101a, 2/17/42) E-GG-B-101a March 23, 1942

Boots; rubber
- hip E-ZZ-B-551a Apr 4, 1942
- short, heavy E-ZZ-B-556a Apr 4, 1942

Bottles; hot-water, rubber E-ZZ-B-586a Apr 8, 1942

Boxes, Bread; hinged-type E-RR-B-623 Apr 11, 1942

Boxes and Outlet Fittings, Floor; (for) rigid-steel conduit and electric-metallic tubing (steel) (superseding E-W-B-616, 2/27/42) E-W-B-616 April 3, 1942

Bronze; castings (superseding E-QQ-B-691a, 9/16/41) E-QQ-B-691a March 31, 1942

Brushes:
- dust; counter E-H-B-201a March 26, 1942
- dust; painters', flat E-H-B-211 March 26, 1942
- stippling, wall E-H-B-636 March 31, 1942
- varnish; flat E-H-B-696 March 31, 1942
- window E-H-B-751 March 31, 1942

Cable and wire; rubber-insulated, building-type (0 to 5,000-volt service) (superseding E-J-C-103, 12/24/41) E-J-C-103 March 31, 1942

Cards:
- guide (card-size) E-UU-C-76 March 26, 1942
- index E-UU-C-128 March 26, 1942

Clips; paper, wire (superseding E-FF-C-436, 3/6/42) E-FF-C-436 Apr 9, 1942

Coolers, Drinking-Water; electric E-OO-C-566 March 26, 1942

Cord; picture-wire E-RR-C-596 Apr 1, 1942

Emergency Alternate Specifications (Continued)

Felt; coal tar saturated, (for) roofing and waterproofing E-HH-F201 Apr 1, 1942

Fittings; cable and conduit superseding E-W-F-406, 2/27/42) E-W-F-406 Apr 3, 1942

Folders; file, pressboard E-UU-F-581b Apr 3, 1942

Freezers, Ice Cream; hand-operated E-RR-F-646 March 27, 1942

Hardware, Builders':
- door closers E-FF-H-121a Apr 2, 1942
- hinges (nontemplate) E-FF-H-116b Apr 2, 1942
- locks and lock trim E-FF-H-106 Apr 2, 1942
- shelf and miscellaneous E-FF-H-111 Apr 2, 1942

Hardware and Fittings; (for) lavatory partitions and inclosures E-FF-H-136 Apr 2, 1942

Heels; rubber E-ZZ-H-141 Apr 4, 1942

Hose:
- chemical E-ZZ-H-421a Apr 3, 1942
- water, braided E-ZZ-H-601 Apr 9, 1942
- water, wrapped E-ZZ-H-611 Apr 9, 1942

Ice Bags; rubber E-ZZ-I-121 Apr 4, 1942

Lanterns; oil burning, hand globe E-RR-L-112 March 27, 1942

Leather; artificial (upholstery) E-KK-L-136a March 23, 1942

Matches; safety (full-size, in boxes) (superseding E-EE-M-101b, 2/26/42) E-EE-M-101b Apr 3, 1942

Mattresses; cotton (felted) E-V-M-81a Apr 11, 1942

Mopping-Outfits E-RR-M-571 Apr 1, 1942

Oil; flatting E-TT-O-356 Apr 3, 1942

Outlet-Bodies; iron (cast or malleable), Cadmium- or zinc-coated, with covers and accessories (for shore use) (superseding E-W-O-806, 2/27/42) E-W-O-806 Apr 3, 1942

Pads; finger, rubber (for) office use E-ZZ-P-41 Apr 4, 1942

Pads; memorandum (superseding E-UU-P-21, 1/28/42) E-UU-P-21 Apr 3, 1942

Pans, Cake; tinned, round E-RR-P-62 Apr 11, 1942

Paper;
- mimeograph (superseding E-UU-P-388a, 1/22/42) E-UU-P-388a Apr 3, 1942
- teletype, roll and tape E-UU-P-547b March 26, 1942
- writing E-UU-P-641 Apr 3, 1942

Pots; marking (ink) E-RR-P-571 Apr 9, 1942

Receptacles (Convenient Outlets); attachment plugs, current taps, and connectors E-W-R-151 March 27, 1942

Receptacles; waste-paper, metal, office and lobby (superseding E-RR-R-191, 12/17/41) E-RR-R-191 Apr 8, 1942

Sealer, Floor; varnish-type (for wood and cork) E-TT-S-176a Apr 8, 1942

Shades, Window; rollers, slats, cords and accessories E-DDD-S-251 March 26, 1942

Shields; erasing (draftsmen) E-GG-S-321 March 26, 1942

Emergency Alternate Specifications (Continued)

Switches:
- snap, multiple type and combination devices, flush type with wall plates E-W-S-893 March 27, 1942
- snap, single unit interchangeable flush-type with wall plates E-W-S-896 March 27, 1942

Syringes:
- fountain, cloth-inserted E-ZZ-S-901 Apr 8, 1942
- fountain, rubber E-ZZ-S-916 Apr 8, 1942

Tableware; silver-plated (superseding E-RR-T-51a, 11/8/41) E-RR-T-51a Apr 11, 1942

Tile; floor, rubber E-ZZ-T-301 March 27, 1942

Tires, Pneumatic; automobile and motorcycle E-ZZ-T-381d March 31, 1942

Tools:
- Braces; ratchet E-GGG-B-671a Apr 9, 1942
- Drills; breast E-GGG-D-651 Apr 9, 1942
- Drills; hand E-GGG-D-671 Apr 9, 1942
- Frames; hack-saw E-GGG-F-671 Apr 9, 1942
- Levels and Plumbs E-GGG-L-211 Apr 9, 1942
- Planes E-GGG-P-436 Apr 9, 1942
- Plumb-Bobs E-GGG-P-501 Apr 9, 1942
- Rules E-GGG-R-791 Apr 9, 1942
- Screw-Drivers E-GGG-S-121a Apr 9, 1942
- Vises E-GGG-V-436 Apr 9, 1942

Tubing; rubber E-ZZ-T-831b March 31, 1942

Unions:
- brass or bronze, 250-pound (superseding E-WW-U-516, 11/29/41) E-WW-U-516 Apr 9, 1942
- malleable-iron or steel, 250-pound (superseding E-WW-U-531 11/29/41) E-WW-U-531 Apr 9, 1942
- malleable-iron or steel, 300-pound (superseding E-WW-U-536, 11/29/41) E-WW-U-536 Apr 9, 1942

Valves:
- brass or bronze; angle and globe, 150-pound SWP (for land use) E-WW-V-51 Apr 1, 1942
- gate; 125-pound, threaded and flanged (for land use) E-WW-V-76b Apr 1, 1942

U. S. Army and Navy

List of Material and Process Specifications for use in the maintenance and construction of aircraft (Lists Army Air Force, Army-Navy Aeronautical, U.S. Army and Federal Specifications.) May be obtained for use in connection with Army Air Force contracts and for bidding purposes upon request to the Commanding General, AAF Materiel Center, Wright Field, Dayton, Ohio. (superseding issue of March 10, 1942) Bulletin No. 23, April 10, 1942.

Navy Department and Federal Specifications (new and revised) issued during January, February, and March. Monthly Bulletins of Feb. 2, March 2, and Apr. 2, 1942, Bureau of Supplies and Accounts, Navy Dept.

Monthly Report on Changes in U.S. Army Specifications, Federal Specifications, Commercial Standards, Simplified Practice Recommendations compiled by the Standards Branch, Resources Division, Healquarters, Services of Supply, March 1942.

Size of British Trade Journals May Be Standardized

"Paper control in Britain is expected to bring about standardization of size for many trade journals in that country," according to the April 4th issue of *Marketing*. "There has long been a demand from advertisers and their agents for uniform sizes to avoid waste in making different size engravings used in the same campaign. With steadily increasing cuts in the paper quota, trade paper publishers have been forced to reduce their sizes, with the exception of engineering journals that require a certain size to carry blue prints."

New Book Describes Standard Programs Of Technical and Trade Organizations

"STANDARDIZATION Activities of National Technical and Trade Organizations" is the title of a new publication (Miscellaneous M169) released recently by the National Bureau of Standards.

The volume, which was compiled by Robert A. Martino of the Bureau's Codes and Specifications Division, presents what is believed to be a fairly adequate picture of the standardization and simplification movement as now carried on by national technical and trade organizations in the United States. It outlines the activities and accomplishments of 450 American societies and associations which consider standardization as one of their important activities, and devotes special attention to the cooperation of these groups among themselves, and with such general standardizing agencies as the American Society for Testing Materials, Central Committee on Lumber Standards, National Aircraft Standards Committee, the American Standards Association.

During the present emergency this information should be particularly valuable as it makes available to each group a picture of what others are doing thus helping to avoid duplication. It provides the answers to many urgent inquiries received by the National Bureau of Standards from manufacturers, industrial experts, engineers, and purchasing agents, and thus should be a means of furthering the war efforts.

The various organizations are arranged alphabetically and the name and address of the Secretary or other official to whom inquiries should be sent are given in all cases. A bibliography on standardization compiled by Anne L. Baden of the Library of Congress, and a comprehensive index, are also valuable features of the publication.

Copies of M169, bound in buckram, can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C. at 75 cents each.

ASA Standards Activities

Standards Available Since Our April Issue

Cast Iron

- Cast-Iron Culvert Pipe (ASTM A142-38) American Standard G26.1-1942 25¢
- Gray-Iron Castings (ASTM A48-41) American Standard G25.1-1942 25¢
- Lightweight and Thin-Sectioned Gray-Iron Castings (ASTM A190-40) American Standard G27.1-1942 25¢

Copper

- Hot-Rolled Copper Rods for Electrical Purposes (ASTM B49-39) (Revision of H4.7-1940) American Standard H4.7-1942 25¢
- Soft or Annealed Copper Wire (ASTM B3-39) (Revision of H4.1-1940) American Standard H4.1-1942 25¢

Gas Appliance Connectors of Flexible Metal Tubing and Fittings, Listing Requirements American Standard Z21.32-1942 50¢

Industrial Lighting American Recommended Practice A11-1942 (Revision of A11-1930) 25¢

Manufactured Masonry Units

- Brick (Modulus of Rupture, Compressive Strength, Absorption, Freezing, and Thawing), Methods of Testing (ASTM C67-41) American Standard A82.1-1942 25¢
- Concrete Building Brick (ASTM C55.37) American Standard A75.1-1942 25¢
- Concrete Masonry Units, Methods of Testing (ASTM C140-39) American Standard A84.1-1942 25¢
- Hollow Load-Bearing Concrete Masonry Units (ASTM C90-39) American Standard A79.1-1942 25¢
- Hollow Non-Load-Bearing Concrete Masonry Units (ASTM C129-39) American Standard A80.1-1942 25¢
- Sand-Lime Building Brick (ASTM C73-39) American Standard A78.1-1942 25¢
- Solid Load-Bearing Concrete Masonry Units (ASTM C145-40) American Standard A81.1-1942 25¢
- Structural Clay Floor Tile (ASTM C57-39) American Standard A77.1-1942 25¢
- Structural Clay Load-Bearing Wall Tile (ASTM C34-41) American Standard A74.1-1942 25¢
- Structural Clay Non-Load-Bearing Tile (ASTM C56-41) American Standard A76.1-1942 25¢
- Structural Clay Tile, Methods of Testing (ASTM C112-36) American Standard A83.1-1942 25¢

Structural Steel and Concrete Reinforcement

- Axle-Steel Bars for Concrete Reinforcement (ASTM A160-39) American Standard G43.1-1942 25¢
- Fabricated Steel Bar or Rod Mats for Concrete Reinforcement (ASTM A184-37) American Standard G44.1-1942 25¢

High-Strength Structural Rivet Steel (ASTM A195-41) American Standard G42.1-1942 25¢

Low Tensile Strength Carbon-Steel Plates of Structural Quality for Welding (ASTM A78-40) American Standard G40.1-1942 25¢

Structural Silicon Steel (ASTM A94-39) American Standard G41.1-1942 25¢

Welded Steel Wire Fabric for Concrete Reinforcement (ASTM A185-37) American Standard G45.1-1942 25¢

Standards Approved Since Our April Issue

Cast Iron (See "Standards Available" above)

Elevators, Dumbwaiters and Escalators, Safety Code (Supplement to A17.1-1937) American Standard A17.3-1942

Manufactured Masonry Units (See "Standards Available" above)

Structural Steel and Concrete Reinforcement (See "Standards Available" above)

Standards Being Considered by ASA for Approval

Adjustable Face Traffic Control Signal Head Standards D10

Cast-Iron Pipe Flanges and Flanged Fittings, Class 250 (Revision of B16b-1928)

Explosives in Anthacite Mines, Use of M27

Gas Floor Furnaces (CS99-42)

Identification Markings of Compressed Gas Cylinders, Proposed Standardization

Jacks, Safety Code B30

Keyways for Holes in Gears B6.4

Lap-Welded and Seamless Steel Pipe for High-Temperature Service (ASTM A106-40) (Revision of B36.3-1940)

Lime
- Limestone, Quicklime, and Hydrated Lime, Methods of Chemical Analysis of (ASTM C25-29)
- Quicklime for Structural Purposes, Specifications for (ASTM C5-26)

Materials for: Boilers, Pressure Vessels, etc.; Flanges and Boltings; Locomotives
- Boiler Rivet Steel and Rivets (ASTM A31-40) G28
- Carbon-Silicon Steel Plates of Ordinary Tensile Ranges for Fusion-Welded Boilers and Other Pressure Vessels (ASTM A201-39) G31
- Carbon-Steel Plates for Stationary Boilers and Other Pressure Vessels (ASTM A70-39) G29
- Chrome-Manganese-Silicon (CMS) Alloy-Steel Plates for Boilers and Other Pressure Vessels (ASTM A202-39) G32
- High-Tensile Strength Carbon-Silicon Steel Plates for Boilers and Other Pressure Vessels (Plates 4½ In. and Under in Thickness) (ASTM A212-39) G35
- Low-Carbon Nickel-Steel Plates for Boilers and Other Pressure Vessels (ASTM A204-39) G33
- Low Tensile Strength Carbon-Steel Plates of Flange and Firebox Qualities (ASTM A89-39) G30
- Molybdenum-Steel Plates for Boilers and Other Pressure Vessels (ASTM A204-39) G34
- Alloy-Steel Castings for Valves, Flanges, and Fittings for Service at Temperatures from 750 to 1100 F (ASTM A157-41) G36
- Carbon and Alloy-Steel Nuts for Bolts for High-Pressure and High-Temperature Service to 1100 F (ASTM A194-40) G38
- Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves for Parts for Service at Temperatures from 750 to 1100 F (ASTM A182-40) G37

Structural Steel for Locomotives and Cars (ASTM A113-39) G39

Protection of Structures Containing Inflammable Liquids and Gases—Part 3 of Code for Protection Against Lightning (From status as American Tentative Standard to American Standard) C5, Part 3

Public Approval and Certification Procedures Z34

Refrigerators Using Gas Fuel, Approval Requirements for

Rotating Electrical Machinery on Railway Locomotives and Rail Cars and Trolley, Gasoline-Electric and Oil-Electric Coaches (Revision of C35-1936) C35

Standard Machine-Tool Gray "7 B"

Textile Testing Machines (ASTM D76-41) L15

Wool Felt, Methods of Testing (ASTM D461-40) L16

Standards Submitted for Consideration Since Our April Issue

Building Exits Code (Revision of A9-1940)

Cold-Rolled Strip Steel (ASTM A109-38) G47

Forged or Rolled Steel Pipe Flanges for General Service (ASTM A181-37) G46.1

Pipe Threads (Revision of B2-1919)

Wrought-Iron and Wrought-Steel Pipe and Tubing
- Electric-Resistance-Welded Steel Boiler and Superheater Tubes for High-Pressure Service (ASTM A226-40) B36.18
- Electric-Resistance-Welded Steel and Open-Hearth Iron Boiler Tubes (ASTM A178-40) B36.13
- Lap-Welded and Seamless Steel and Lap-Welded Boiler Tubes (ASTM A83-40) B36.12
- Seamless Alloy-Steel Boiler and Superheater Tubes (ASTM A213-40) B36.17
- Seamless Steel Boiler Tubes for High-Pressure Service (ASTM A192-40) B36.14
- Spiral-Welded Steel or Iron Pipe (ASTM A211-40) B36.16
- Medium-Carbon Seamless Steel Boiler and Superheater Tubes (ASTM A210-40) B36.15

Withdrawal of Approval Being Considered

Colors for Traffic Signals, Safety Code D3-1927

New Project Being Considered

Performance of commercial dishwashing machines, and practice for dishwashing operation

Defense Emergency Standards

Standards Approved and Published

Accuracy of Engine Lathes B5.16-1941

Allowable Concentration of Cadmium Z37.5-1941

Guide for Quality Control Z1.1-1941

Control Chart Method of Analyzing Data Z1.2-1941

Standards Approved Since Our March Issue

Control Chart Method of Controlling Quality During Production Z1.3-1942

Standards Under Way

Allowable Concentration of Ether Z37

Allowable Concentration of Manganese Z37

Allowable Concentration of Xylene Z37

Allowable Concentration of Xylol Z37

Color, Specification and Description Z44

Color Fastness of Textiles. Terminology

Machine Tool Electrical Standards C74

Military Radio Equipment and Parts C75

Protective Lighting of Industrial Plants A85

Requests for Emergency Projects Being Considered

Graphical Symbols for Electric Power, Control and Measurement Z32.3

Graphical Symbols for Telephone, Telegraph, and Radio Use

Packaging of Electronic Tubes